



UTILITIES CO.

A Division of MDU Resources Group, Inc.

400 North Fourth Street  
Bismarck, ND 58501  
(701) 222-7900

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November 2, 2015

Mr. Charles E. Magraw  
501 8<sup>th</sup> Ave.  
Helena, MT 59601

Re: General Electric Rate Application  
Docket No. D2015.6.51

Dear Mr. Magraw:

Enclosed please find Montana-Dakota Utilities Co.'s responses to The Alliance for Solar Choice's data requests dated October 16, 2015.

Sincerely,

A handwritten signature in blue ink that reads 'Tamie A. Aberle'.

Tamie A. Aberle  
Director of Regulatory Affairs

Attachments

cc: Service List

Montana-Dakota Utilities Co.  
Docket No. D2015.6.51  
Service List

Mr. Will Rosquist  
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DEPARTMENT OF PUBLIC SERVICE REGULATION  
BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MONTANA

IN THE MATTER OF the application of ) REGULATORY DIVISION  
Montana-Dakota Utilities Company a )  
Division Of MDU Resources Group, Inc., ) DOCKET NO. D2015.6.51  
for Authority to Establish Increased Rates )  
for Electric Service in the State of Montana )

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THE ALLIANCE FOR SOLAR CHOICE'S SECOND SET OF  
DATA REQUESTS TO MONTANA-DAKOTA UTILITIES CO.

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The Alliance for Solar Choice (TASC), by and through its undersigned counsel pursuant to applicable rules of procedure, submits the attached Data Requests to the Montana-Dakota Utilities Co. ("MDU"). The definitions and instructions apply to the attached Data Requests:

**RESPONSE DATE, DEFINITIONS AND INSTRUCTIONS**

Please respond to these Data Requests within fourteen (14) calendar days, i.e., by October 30, 2015.

**INSTRUCTIONS**

- A. Please restate the interrogatory immediately preceding each response.
- B. As used herein, the terms "MDU" or "Company" means The Montana-Dakota Utilities Company and any and all of its subsidiaries, parent companies, affiliates, present and former employees, agents, consultants, attorneys, officials, and any and all other persons acting on its behalf.
- C. Identify the name, title and business address of each person(s) providing each response and provide the date on which each response was created. Further, please designate the MDU witness, if any, to cross-examine at the hearing concerning the response. If witnesses have not yet been selected at the time a data response is provided, please supplement the response once witnesses have been selected to provide the requested information.
- D. These requests for documents and responses are continuing in character. The Respondent is obliged to change, supplement and correct all answers to

- O. The term “communications” includes all verbal and written communications of every kind, including but not limited to telephone calls, conferences, notes, correspondence, and all memoranda concerning the requested communications.
- P The term “document” shall include, without limitation, all writings and records of every type in your possession, control, or custody. “Documents” shall also refer to copies of documents (even though the originals thereof are not in your possession, custody, or control), every copy of a document which contains handwritten or other notations or which otherwise does not duplicate the originals or any other copy, and all attachments or appendices to any documents.
- Q. “Study,” “studies,” “analyses” or “report(s)” denotes any document, as defined above, which reflects or was utilized in the collection, evaluation, analysis, summarization, or characterization of data in connection with these requests.
- R. Please provide a set of responses via e-mail where appropriate, and via hard copy where appropriate, to:

Electronic copies to:

Chuck Magraw  
[c.magraw@bresnan.net](mailto:c.magraw@bresnan.net)

David Wooley  
[dwooley@kfwlaw.com](mailto:dwooley@kfwlaw.com)

Tom Power  
[tom@powereconconsulting.com](mailto:tom@powereconconsulting.com)

Hard or paper copies, if necessary, to:

David Wooley  
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436 14<sup>th</sup> St., Suite 1305  
Oakland, CA 94612

Charles Magraw  
501 8<sup>th</sup> Ave  
Helena, MT 59601

Thomas Michael Power  
Power Consulting, Inc.  
920 Evans Avenue  
Missoula, MT 59801

- previous question (a).
- c) Provide an estimate of the costs of such metering equipment to residential customers taking service under Rate 92.
  - d) If residential customers are required to pay for additional metering, state how this requirement is consistent with the terms of the Montana Net Metering statute which was adopted to encourage private investment in renewable energy resources and states that a “utility shall allow net metering systems to be interconnected using a standard kilowatt-hour meter capable of registering flow of electricity in two directions” “in accordance with normal metering practices.” Montana Code § 69-8-601, 602 and 603.

TASC-036 RE: Subsidy for customers with behind the meter generation

In regard to Ms. Aberle’s response to TASC data requests 004 and 006, is it MDU’s position that net metering customers do not pay their fair share of “...the standby generation, transmission and distribution investments necessary to serve distributed generation customers.”

TASC-037 RE: Subsidy for customers with behind the meter generation

According to MDU response to PSC-004, the Net Metering customers in Montana, fed almost no “excess generation” into the grid. Rate 10 Customers #1 and #2 fed no energy into the grid over three years; Rate 20 Customer #2 fed less than one percent (0.87%) of the equivalent of their net purchases from MDU into the grid over the three-year period. Rate 20 Customer #1 fed the equivalent of 1.7 percent of its net purchases from MDU into the grid. The total “payment” all of these four net metering customers “received” from MDU for energy fed into the grid over those three years was \$73.98, about 51 cents per customer per month. Is this amount the “subsidy” that is referred to in Ms. Aberle’s testimony?

TASC-038 RE: Estimating monthly demand from the AMR data for residential customers

In response to TASC-018 MDU stated that the “94 percent of the customers in Montana are network AMR customers with the capability of producing 5 minute data on an hourly basis.”

- a. In MDU’s response to PSC-005(a), Attachment A, the impact of the proposed demand charge on the two residential net metering customers that MDU has in Montana was estimated. Please explain how the monthly demand for these two customers was estimated given that they did not have demand meters. Provide work papers.

into the grid so that that excess generation can be used to offset future electricity taken from the grid?

c. Would MDU seek to impose any other limits or charges on self-generating residential or small general service customers who did not wish credit for generation in excess of their own electrical usage?

TASC-041 RE: Explanation of the classification of poles, conductors, and conduit between customer and demand related functions.

Statement L, tab "distribution plant," provides calculations on the "Distribution Plant Allocation." Cell C18 has a note on it saying "Split comes from Distribution-Engineering Worksheet." It is not clear that such a worksheet is contained in Statement L. Please indicate where this worksheet can be found or supply it with all Excel formulae and links active and accessible.

TASC-042 RE: Minimum system calculations of customer and demand components of distribution system costs.

In the Marginal Cost of Service Study (Exhibit SJC1-SJC11) marginal distribution capacity costs are calculated using a Minimum System approach. On the Distribution-Capacity Related tab, the minimum pole and conductor costs are displayed (cells C38-F48).

Please indicate the design capacity for each element of both the minimum and normal systems (Pole, Overhead Conductor, and URD Conductor). That is, what is the upper limit of the normal design capacity of each element of the two distribution systems.

TASC-043 RE: The allocation of the fixed costs associated with production and transmission.

a. Is it true that Production and Transmission Plant, Accumulated Depreciation, and Expenses (less fuel and purchased power costs) are allocated to customer classes on the basis of Average and Excess Demand (Allocation Factor 2)? If the answer in "no," please explain how those production and transmission costs are allocated to customer classes.

b. Is it true that MDU's cost of service for the Residential Class includes the following demand-related costs:

Production & Transmission Demand	\$ 9,181,111
Distribution Demand	\$ 1,017,712
Total Demand Related Costs	\$10,198,823

b. Are part of the “long term” “reduced costs” associated with demand reductions on MDU’s system reductions in the fixed costs of production and transmission? If the answer is “no,” please explain.

c. Given that the Average and Excess Demand allocator allocates fixed production and transmission costs to customer classes heavily (76 percent) on the basis of energy consumption, please explain why it would not be appropriate to collect only the excess demand portion of the fixed production and transmission costs allocated to the residential class when calculating a residential demand charge (Rate 92 Demand.xlsx).

TASC-045 RE: Explanation of MDU’s response to TASC-004.

a. There appears to be some words missing from MDU’s response to TASC-004. The response appears to jump from commenting on net metering customers being paid the retail rate for energy generated above their use to a mention of the “standby generation, transmission, and distribution investments necessary to serve distributed generation customers.” Could you please clarify or rephrase this response?

b. If the “subsidy” associated with net metering customers is the payment of the retail rate for generation in excess a customer’s needs, does that mean that it is MDU’s position that customers whose self-generation rarely if ever exceeds their own use do not receive a “subsidy”? Please explain.

c. Can MDU confirm that its two residential net metering customers in Montana never produce electricity that exceeded their own use, i.e. MDU response to PSC-004(b) (Attachment A, pp. 1-2) shows that Residential Rate 10 customers #1 and #2 never generated electricity in excess of their own use over the three years reported.

TASC-046 RE: Peak demand hours

Please describe which hours of the day MDU’s system typically reaches its peak demand during summer and winter

TASC-047 RE: Residential Frequency Analysis

Please provide residential frequency analyses for (a) the average annual kWh consumed, (b) the monthly maximum kWh consumed, (c) the average annual residential bill, and (d) the monthly maximum residential bill, as well as the calendar year for which this data is available.

**CERTIFICATE OF SERVICE**

I hereby certify that on this, the 16<sup>th</sup> day of October, 2015 **THE ALLIANCE FOR SOLAR CHOICE'S SECOND SET OF DATA REQUESTS TO MONTANA-DAKOTA UTILITIES CO.** was e-filed with the Commission and served via U.S. Mail and email, unless otherwise noted, to the following:

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Montana Public Service Commission  
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**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-031**

**RE: Effect of Rate 92 on Renewable Energy Investment**

**Please provide all studies, analyses, workpapers, memoranda or other documents prepared by MDU relating to the impact of its proposed Net Metering Rate 92 on customers' decisions to make investments to in customer-sited renewable energy.**

**Response:**

No such studies were performed.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-032**

**RE: Effect of Rate 92 on Renewable Energy Investment**

**Please provide MDU's forecast of penetration of solar photovoltaics and wind energy systems owned by customers in the residential and commercial sectors (a) under current rate design, and (b) under its proposals for a net metering customer demand charge. Provide supporting analyses and workpapers.**

**Response:**

Montana-Dakota has not prepared the requested forecast.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-033**

**RE: Load Forecast**

**Please provide MDU's latest load forecasts for the residential and small commercial customer classes and any documentation of those forecasts that MDU prepared. If the forecasts are fully or partially econometric, provide all data, equations, and tests of statistical significance. If the load forecasts and work papers were developed using Excel, provide copies of the Excel workbooks with all formulae and functions active.**

**Response:**

Please see Response Nos. PSC-022 and LCG-033 for updated forecasts for the Company's Integrated System and the Company's Montana service territory. See Response No. LCG-053 for documentation outlining the development of the residential and small commercial customer class forecasts.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-034**

**RE: Load Growth**

**In regard to DJN1 Demand and Energy 1985 to 2014.xlsx, describe in detail which customer classes are responsible for what portions of the growth after the year 2000 for:**

- a) Requirements**
- b) Summer peak Load**
- c) Winter Peak load**

**Response:**

- a) Please see Response No. LCG-033 Attachment A.
- b) This information is not available.
- c) This information is not available.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-035**

**RE: Metering Requirements for residential customers - Rate 92**

In the General Terms and Conditions of The Proposed Rate 92 Tariff the words "For Demand-Metered facilities" are removed from the existing tariff suggesting that residential net metered customers may now be required to have a demand meter.

- a) Please confirm or deny that existing and future residential net meter customers will have to add a demand meter or other non standard metering equipment in order to take service under the proposed Rate 92
- b) State who will pay for any additional metering described in answer to the previous question (a).
- c) Provide an estimate of the costs of such metering equipment to residential customers taking service under Rate 92.
- d) If residential customers are required to pay for additional metering, state how this requirement is consistent with the terms of the Montana Net Metering statute which was adopted to encourage private investment in renewable energy resources and states that a "utility shall allow net metering systems to be interconnected using a standard kilowatt-hour meter capable of registering flow of electricity in two directions" "in accordance with normal metering practices." Montana Code § 69-8-601, 602 and 603.

**Response:**

- a) Montana-Dakota is evaluating whether a demand meter will be necessary or if available network data will be sufficient for billing information.
- b) Metering costs are the responsibility of the Company.
- c) Please see Response b) above.
- d) Please see Response b) above.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-036**

**RE: Subsidy for customers with behind the meter generation**

**In regard to Ms. Aberle's response to TASC data requests 004 and 006, is it MDU's position that net metering customers do not pay their fair share of "...the standby generation, transmission and distribution investments necessary to serve distributed generation customers."**

**Response:**

Yes.

MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51

TASC-037

RE: Subsidy for customers with behind the meter generation

According to MDU response to PSC-004, the Net Metering customers in Montana, fed almost no "excess generation" into the grid. Rate 10 Customers #1 and #2 fed no energy into the grid over three years; Rate 20 Customer #2 fed less than one percent (0.87%) of the equivalent of their net purchases from MDU into the grid over the three-year period. Rate 20 Customer #1 fed the equivalent of 1.7 percent of its net purchases from MDU into the grid. The total "payment" all of these four net metering customers "received" from MDU for energy fed into the grid over those three years was \$73.98, about 51 cents per customer per month. Is this amount the "subsidy" that is referred to in Ms. Aberle's testimony?

**Response:**

The referenced subsidy is theoretical at this point given the few customers on net metering.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-038**

**RE: Estimating monthly demand from the AMR data for residential customers**

**In response to TASC-018 MDU stated that the "94 percent of the customers in Montana are network AMR customers with the capability of producing 5 minute data on an hourly basis."**

- a. In MDU's response to PSC-005(a), Attachment A, the impact of the proposed demand charge on the two residential net metering customers that MDU has in Montana was estimated. Please explain how the monthly demand for these two customers was estimated given that they did not have demand meters. Provide work papers.**
- b. In MDU's response to PSC-005(c), MDU states that "Montana-Dakota is proposing to utilize network data available through the current automated meter reading system [for demand billing determinants] for the net metering residential customers." Please explain how demand billing determinants would be obtained from this AMR energy usage information.**

**Response:**

- a. The residential customers' demand determinants were derived from the respective residential customers' interval data. Please see the file titled TASC – 038 Attachment A on the enclosed CD for the interval data used.

The two commercial customers' demand determinants were estimated using the Small General Service class' load factor. Please see Attachment B for the supporting workpaper.

- b. The interval data would provide the maximum use in the billing period representing the billable demand.

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - MONTANA**

**TASC - 038 Attachment A  
Small Secondary - Rate 205**

Acct	Month	Kwh	Load Factor	Hours	KW 1/
205-1	1	1,956	59.5464%	744	4.4
	2	1,463	69.3653%	672	3.1
	3	1,422	56.6220%	744	3.4
	4	872	65.8724%	720	1.8
	5	719	55.3266%	744	1.7
	6	487	47.9691%	720	1.4
	7	383	56.3236%	744	0.9
	8	371	51.9800%	744	1.0
	9	601	47.5108%	720	1.8
	10	672	54.0897%	744	1.7
	11	721	68.8091%	720	1.5
	12	1,219	70.4657%	744	2.3
		10,886			25.0

Acct	Month	Kwh	Load Factor	Hours	KW 1/
205-2	1	2,684	59.5464%	744	6.1
	2	3,436	69.3653%	672	7.4
	3	3,601	56.6220%	744	8.5
	4	2,585	65.8724%	720	5.5
	5	1,728	55.3266%	744	4.2
	6	781	47.9691%	720	2.3
	7	410	56.3236%	744	1.0
	8	289	51.9800%	744	0.7
	9	534	47.5108%	720	1.6
	10	348	54.0897%	744	0.9
	11	510	68.8091%	720	1.0
	12	2,365	70.4657%	744	4.5
		19,271			43.7

1/ Estimated

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-039**

**RE: MDU's proposal for metering residential net metering customers**

**In response to TASC-018, MDU states that: "Under the Company's proposal demand meters registering 15 minute data each month would be used for billing purposes." In response to TASC-005(c) these demand meters were characterized as follows: "For demand metering, a more complex meter is required and would raise the installed cost to about \$270 [compared to a traditional residential, kWh only, meter, costing \$88].**

**Also in response to PSC-005(c) MDU states that "Montana-Dakota is proposing to utilize network data available through the current automated meter reading system [for demand billing determinants] for the net metering residential customers." "**

**Please explain these apparent contradictory assertions about how residential net metering customers would be metered to obtain demand billing determinants.**

**Response:**

**As noted in Response No. TASC-035, Montana-Dakota is evaluating whether a demand meter will be necessary or if available network data will be sufficient for billing information.**

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-040**

**RE: The tariff applicable to residential customers installing renewable electric generating equipment to serve part of their load.**

In response to TASC-020 MDU stated that "The demand charge is proposed to be applicable to customers choosing the net metering option and therefore not automatically applicable to all customers that install renewable energy generation behind-the-meter."

The Net Metering Service Rate 92 tariff sheet (1st Revised Sheet No. 44) says that Net Metering Service is available to customers who owns, and/or, operates...renewable energy sources...that is intended primarily to offset part or all of the customer's own electrical requirements. The generating facility...must be interconnected and operated in parallel with the Company's existing distribution facilities."

- a. Is it MDU's position that a customer with renewable energy generating equipment behind the meter can operate that equipment to offset part or all of the customer's own electrical requirements under the standard residential or small general service tariffs?
- b. Is Net Metering Service Rate 92 a voluntary option for customers who want the option of feeding renewable electric generation in excess of the customer's needs into the grid so that that excess generation can be used to offset future electricity taken from the grid?
- c. Would MDU seek to impose any other limits or charges on self-generating residential or small general service customers who did not wish credit for generation in excess of their own electrical usage?

**Response:**

- a. Yes.
- b. Yes.
- c. Montana-Dakota is not proposing to demand meter any other residential customers in this case.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-041**

**RE: Explanation of the classification of poles, conductors, and conduit  
between customer and demand related functions.**

**Statement L, tab "distribution plant," provides calculations on the "Distribution Plant Allocation." Cell C18 has a note on it saying "Split comes from Distribution-Engineering Worksheet." It is not clear that such a worksheet is contained in Statement L. Please indicate where this worksheet can be found or supply it with all Excel formulae and links active and accessible.**

**Response:**

Please see Response No. MCC-124(a).

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
DOCKET NO. D2015.6.51**

**TASC-042**

**RE: Minimum system calculations of customer and demand components of distribution system costs.**

**In the Marginal Cost of Service Study (Exhibit SJC1-SJC11) marginal distribution capacity costs are calculated using a Minimum System approach. On the Distribution-Capacity Related tab, the minimum pole and conductor costs are displayed (cells C38-F48).**

**Please indicate the design capacity for each element of both the minimum and normal systems (Pole, Overhead Conductor, and URD Conductor). That is, what is the upper limit of the normal design capacity of each element of the two distribution systems.**

**Response:**

Montana-Dakota designs its typical circuits for 200 amps of capacity maximum during normal system peak with a voltage drop not to exceed +/- 5% on the worst case secondary service points from the distribution transformer at full system regulation support. This is the design philosophy of Montana-Dakota and is irrelevant of the voltage of the primary system. The minimum system described in the studies is using a 1/0 size system and it is difficult to indicate a maximum design capacity for a minimum system due to the issues of voltage drop/capacity issues of an overall feeder design from a voltage drop standpoint. Capacity is not related directly to ampacity of the system conductors used for nominal vs minimum system as determined in the study.

Typically Montana-Dakota uses 500 MCM Urd wire for a main feeder for a nominal design where the ampacity of this conductor is 460 amps vs minimum conductor of 1/0 URD at 195 amps, overhead conductors would be a similar in ratio of ampacity.

**MONTANA-DAKOTA UTILITIES CO.  
ALLIANCE FOR SOLAR CHOICE'S  
DATA REQUEST  
DATED OCTOBER 16, 2015  
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**TASC-043 RE: The allocation of the fixed costs associated with production and transmission.**

a. Is it true that Production and Transmission Plant, Accumulated Depreciation, and Expenses (less fuel and purchased power costs) are allocated to customer classes on the basis of Average and Excess Demand (Allocation Factor 2)? If the answer is "no," please explain how those production and transmission costs are allocated to customer classes.

b. Is it true that MDU's cost of service for the Residential Class includes the following demand-related costs:

Production & Transmission Demand	\$ 9,181,111
Distribution Demand	\$ 1,017,712
Total Demand Related Costs	\$10,198,823

(Statement L Embedded Cost of Ser Analysis, Cost by Component, cells C28 to D28.)

If the answer is "no," please explain what the demand allocations to the residential class in the cost of service analysis are and where they are located in Statement L.

- c. Is it true that the Residential Class allocation of Production and Transmission Demand cost was based on the Average and Excess Demand Allocator? If the answer is "no," please explain what allocator was used and where it is found in Statement L.
- d. Do you agree that the Average and Excess Demand Allocator allocates part of the coincident peak responsibility on the basis of class contribution to average demand (or energy) and part on the basis of class contribution to total non-coincident peak excess demand? If not, please explain what part of this characterization of the Average and Excess Demand allocator you disagree with.
- e. Do you agree that the demand charge calculated for the net metering residential customers was based on calculating a demand charge that would collect all of the residential demand-related costs including production and transmission costs? (Rate 92 Demand.xlsx, Demand Component Residential Service Under Rate 92", tab Rate 92 Res Demand, line 16) If the answer is "no," please explain what costs would be the basis of that demand charge.
- f. Do you agree that the weight placed on average demand or energy in MDU's Average and Excess Demand allocation is approximately 76

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**percent, the MDU Montana system load factor, and that the weight placed on the excess demand is about 24 percent? (Statement L, tab "demand & energy-AED," J56/D60) If the answer is "no," please explain and provide the system coincident load factor used in the Average and Excess Demand allocation.**

**Response:**

- a. Yes, with the exception of the wind production related costs that are allocated on Factor 3.
- b. Yes.
- c. Please see Response No. TASC-043 a.
- d. Yes
- e. Yes. The demand charge is based on the collection of allocated demand costs based on the peak demand for the class.
- f. Yes that is true for the total. The split is approximately 66 percent average and 34 percent excess for the residential class.

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**TASC-044**

**RE: Characterization of MDU's allocation of fixed production and transmission costs to the residential class.**

In MDU's response to TASC-015, MDU states that "customer conservation efforts through permanent changes like improved buildings and structures have the potential to reduce demand. While both [customer conservation and customer renewable generation] may result in some short term losses because revenue under both situations is decreased, in the long term, upgrades that decrease the demand on the system will reduce costs."

- a. If a customer-owned renewable generation facility was shown to reduce the demand on MDU's system, would that customer also "decrease the demand on the system" and, "in the long term," "reduce costs." If the answer is "no," please explain.
- b. Are part of the "long term" "reduced costs" associated with demand reductions on MDU's system reductions in the fixed costs of production and transmission? If the answer is "no," please explain.
- c. Given that the Average and Excess Demand allocator allocates fixed production and transmission costs to customer classes heavily (76 percent) on the basis of energy consumption, please explain why it would not be appropriate to collect only the excess demand portion of the fixed production and transmission costs allocated to the residential class when calculating a residential demand charge (Rate 92 Demand.xlsx).

**Response:**

- a. To the extent a customer requires back up service demand is not reduced.
- b. Yes long term reductions in demand will result in reduced costs.
- c. The appropriate fixed costs would not be recovered if only the excess demand portion would be recovered through a demand charge.

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**TASC-045**

**RE: Explanation of MDU's response to TASC-004.**

- a. There appears to be some words missing from MDU's response to TASC-004. The response appears to jump from commenting on net metering customers being paid the retail rate for energy generated above their use to a mention of the "standby generation, transmission, and distribution investments necessary to serve distributed generation customers." Could you please clarify or rephrase this response?**
- b. If the "subsidy" associated with net metering customers is the payment of the retail rate for generation in excess a customer's needs, does that mean that it is MDU's position that customers whose self-generation rarely if ever exceeds their own use do not receive a "subsidy"? Please explain.**
- c. Can MDU confirm that its two residential net metering customers in Montana never produce electricity that exceeded their own use, i.e. MDU response to PSC-004(b) (Attachment A, pp. 1-2) shows that Residential Rate 10 customers #1 and #2 never generated electricity in excess of their own use over the three years reported.**

**Response:**

- a. The response was referring to two forms of a subsidy 1) the retail rate paid for excess generation and 2) the cost of providing standby service without compensation.
- b. Please see Response No. TASC-046a.
- c. That is correct.

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**TASC-046**

**RE: Peak demand hours**

**Please describe which hours of the day MDU's system typically reaches its peak demand during summer and winter**

**Response:**

Summer peak demand hours typically occur on hours ending 1700 or 1800.  
Winter peak demand hours typically occur on hours ending 1900 or 2000.

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**TASC-047**

**RE: Residential Frequency Analysis**

**Please provide residential frequency analyses for (a) the average annual kWh consumed, (b) the monthly maximum kWh consumed, (c) the average annual residential bill, and (d) the monthly maximum residential bill, as well as the calendar year for which this data is available.**

**Response:**

Please see Statement M, pages 22 for the average annual consumption and bill amounts. Please see the file titled TASC-047 Statement M Page 23 on the attached CD for monthly maximum consumption and bill amounts.

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**TASC-048**

**RE: Benefits and costs of distributed renewable generation**

**Please state whether Ms. Aberle reviewed any of the following studies prior to the filing of the current MDU rate case. If she did review any of these or similar studies, please identify those that she did review.**

Study	Funded / Commissioned by	Prepared by
Xcel Energy, Inc. Costs and Benefits of Distributed Solar Generation on the Public Service Company of Colorado System. May 2013.	Xcel Energy	Xcel Energy
SAIC. 2013 Updated Solar PV Value Report. Arizona Public Service. May, 2013.	Arizona Public Service	SAIC
Beach, R., McGuire, P., The Benefits and Costs of Solar Distributed Generation for Arizona Public Service. Crossborder Energy May, 2013.		Crossborder Energy
Noms, B., Jonas, N. The Value of Distributed Solar Electric Generation to San Antonio. Clean Power Research & Solar San Antonio, March 2013.	DOE Sunshot Initiative	Clean Power Research & Solar San Antonio
Beach, R., McGuire, P., Evaluating the Benefits and Costs of Net Energy Metering for Residential Customers in California. Crossborder Energy, Jan. 2013.	Vote Solar Initiative	Crossborder Energy
Rabago, K., Noms, B., Hoff, T., Designing Austin Energy's Solar Tariff Using A Distributed PV Calculator. Clean Power Research & Austin Energy, 2012.	Austin Energy	Clean Power Research & Austin Energy
Perez, R., Noms, B., Hoff, T., The Value of Distributed Solar Electric Generation to New Jersey and Pennsylvania. Clean Power Research, 2012.	The Mid-Atlantic Solar Energy Industries Association, & The Pennsylvania Solar Energy Industries Association	Clean Power Research
Mills, A., Wiser, R., Changes in the Economic Value of Variable Generation at High Penetration Levels: A Pilot Case Study of California. Lawrence Berkeley National Laboratory, June 2012.	DOE Office of Energy Efficiency and Renewable Energy and Office of Electricity Delivery and Energy Reliability	Lawrence Berkeley National Laboratory
Energy and Environmental Economics, Inc. Technical Potential for Local Distributed Photovoltaics in California. Preliminary Assessment, March 2012.	California Public Utilities Commission	Energy and Environmental Economics, Inc. (E3)
Energy and Environmental Economics, Inc. California Solar Initiative Cost-Effectiveness Evaluation, April 2011.	California Public Utilities Commission	Energy and Environmental Economics, Inc. (E3)
R.W. Beck, Arizona Public Service, Distributed Renewable Energy Operating Impacts and Valuation Study, Jan. 2009.	Arizona Public Service	R.W. Beck, Inc. with Energized Solutions, LLC, Phasor Energy Company, Inc. & Summit Blue Consulting, LLC
Perez, R., Hoff, T., Energy and Capacity Valuation of Photovoltaic Power Generation in New York, Clean Power Research, March 2008.	Solar Alliance and the New York Solar Energy Industry Association	
Contreras, J.L., Frantzis, L., Blazewicz, S., Pinault, D., Sawyer, H., Photovoltaics Value Analysis. Navigant Consulting, Feb, 2008.	National Renewable Energy Laboratory	Navigant Consulting, Inc.
Hoff, T., Perez, R., Braun, G., Kuhn, M., Noms, B., The Value of Distributed Photovoltaics to Austin Energy and the City of Austin. Clean Power Research, March 2006.	Austin Energy	Clean Power Research
Smeloff, E., Quantifying the Benefits of Solar Power for California. Vote Solar, Jan. 2005.	Vote Solar Initiative	Ed Smeloff
Duka, R., Williams, R., Payne A., Accelerating Residential PV Expansion: Demand Analysis for Competitive Electricity Markets. Energy Policy 33, 2005, pp. 1912-1929.	EPA STAR Fellowship, the Energy Foundation, The Packard Foundation, NSF	Princeton Environmental Institute, Princeton University

**Response:**

Ms. Aberle recalls reviewing the R.W. Beck Arizona Public Service, *Distributed Renewable Energy Operating Impacts and Valuation Study*, Jan. 2009 at some point.